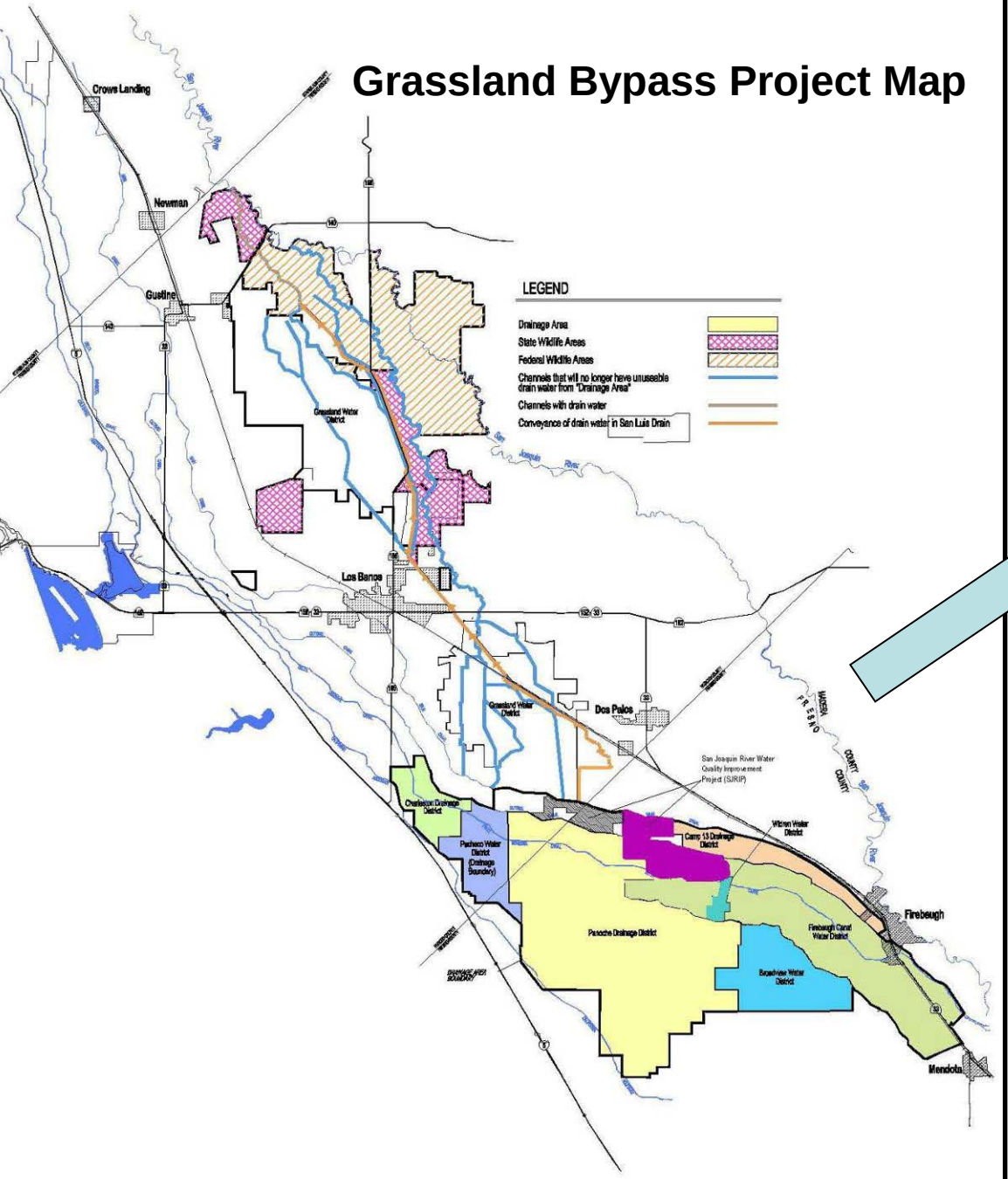
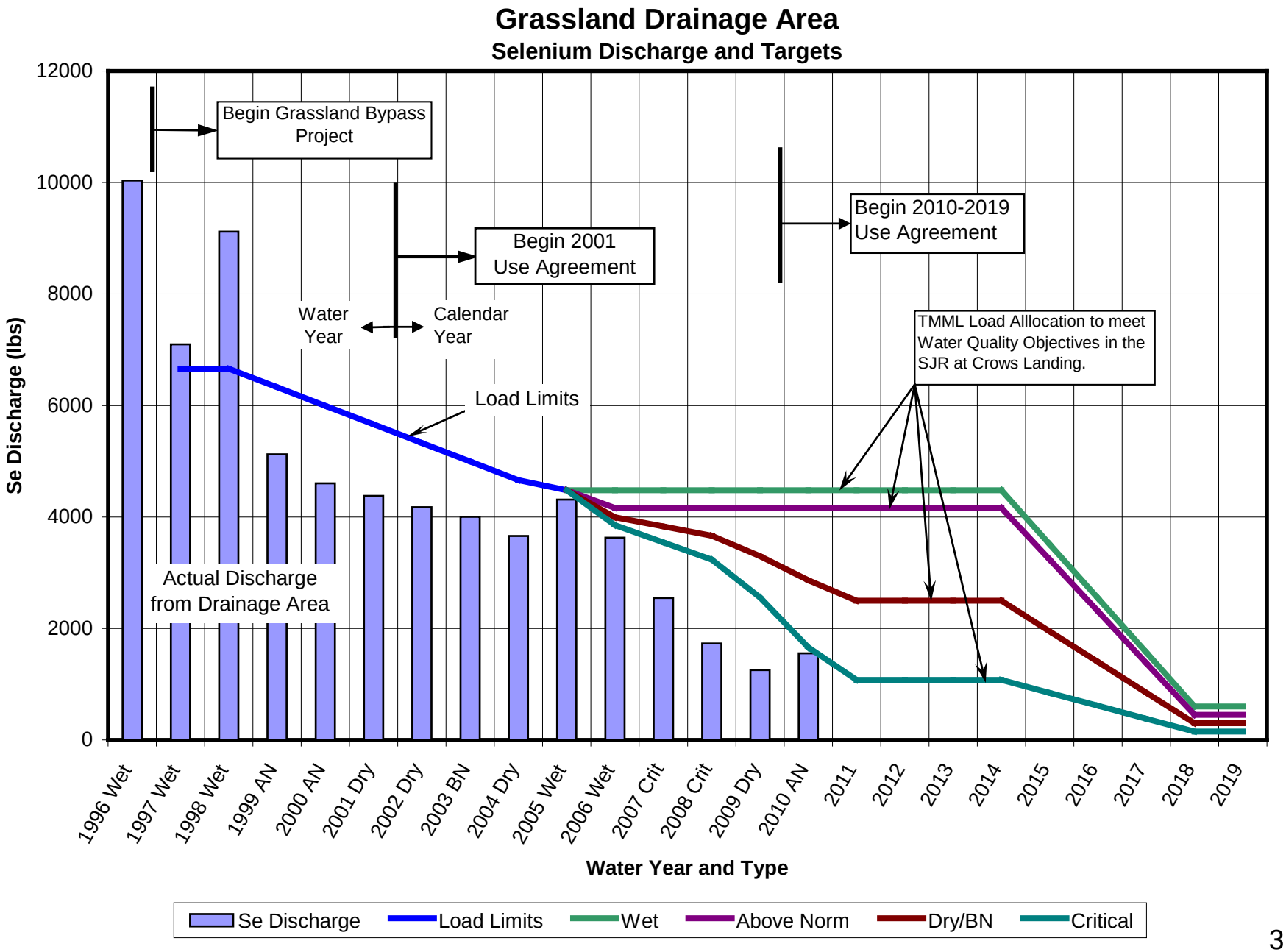
Grassland Bypass Project Map

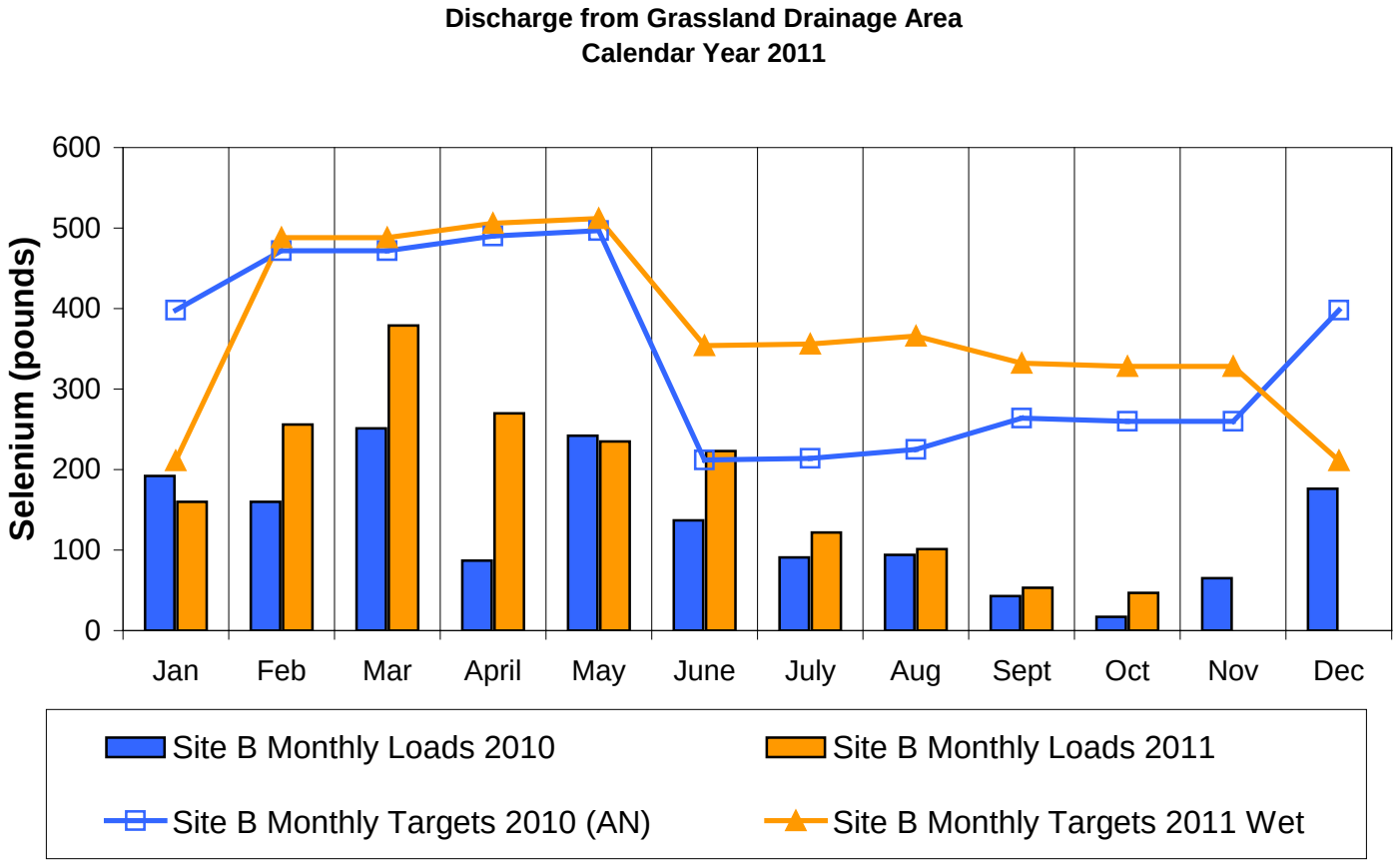


California, USA

Grassland Bypass Project

- Program developed with regulatory agencies and environmental interests
- Manages subsurface drainwater from 97,000 acres
- Facilitates delivery of fresh water to Federal, State and local wetlands
- Imposes multiple economic incentives to reduce drainage
- Mitigates for Mud Slough impacts
- Includes robust monitoring program
- Governed by Oversight Committee – Members USBR, USF&WS, EPA, DF&G and RWQCB
- The continuation of the project provides drainage service to 97,000 acres of highly productive land on the Westside of the San Joaquin Valley providing over $600 million in jobs and economic benefits

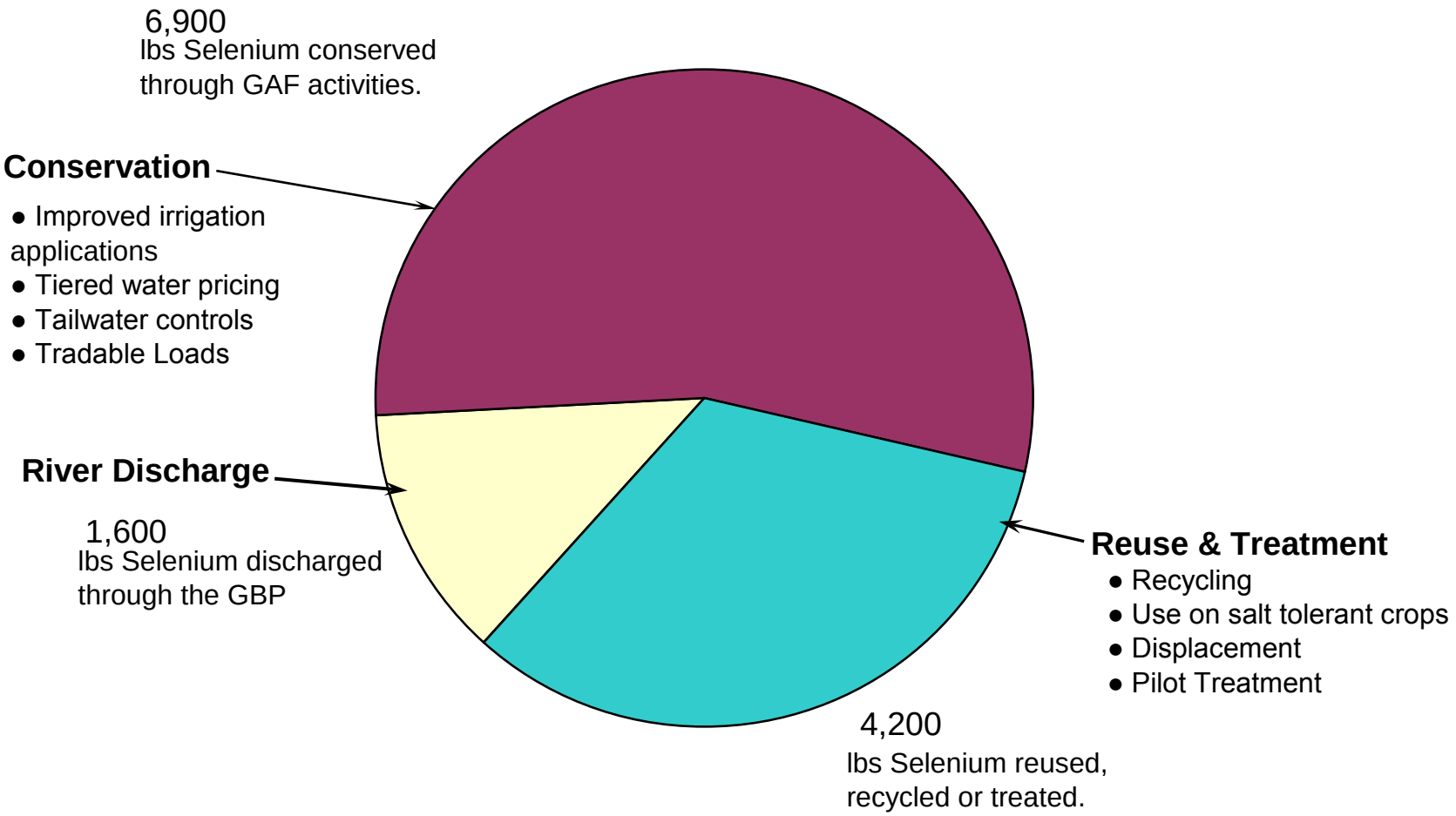

Grassland Drainage Area
Selenium Discharge and Targets
Se Discharge (lbs)
12000
10000
8000
6000
4000
2000
0
Begin Grassland Bypass Project
Begin 2001 Use Agreement
Begin 2010-2019 Use Agreement
Water Year
Calendar Year
TMML Load Alllocation to meet Water Quality Objectives in the SJR at Crows Landing.
Load Limits
Actual Discharge from Drainage Area
1996 Wet
1997 Wet
1998 Wet
1999 AN
2000 AN
2001 Dry
2002 Dry
2003 BN
2004 Dry
2005 Wet
2006 Wet
2007 Crit
2008 Crit
2009 Dry
2010 AN
2011
2012
2013
2014
2015
2016
2017
2018
2019
Water Year and Type
Se Discharge
Load Limits
Wet
Above Norm
Dry/BN
Critical


Discharge from Grassland Drainage Area
Calendar Year 2011
Selenium (pounds)
600
500
400
300
200
100
0
Jan
Feb
Mar
April
May
June
July
Aug
Sept
Oct
Nov
Dec
Site B Monthly Loads 2010
Site B Monthly Loads 2011
Site B Monthly Targets 2010 (AN)
Site B Monthly Targets 2011 Wet

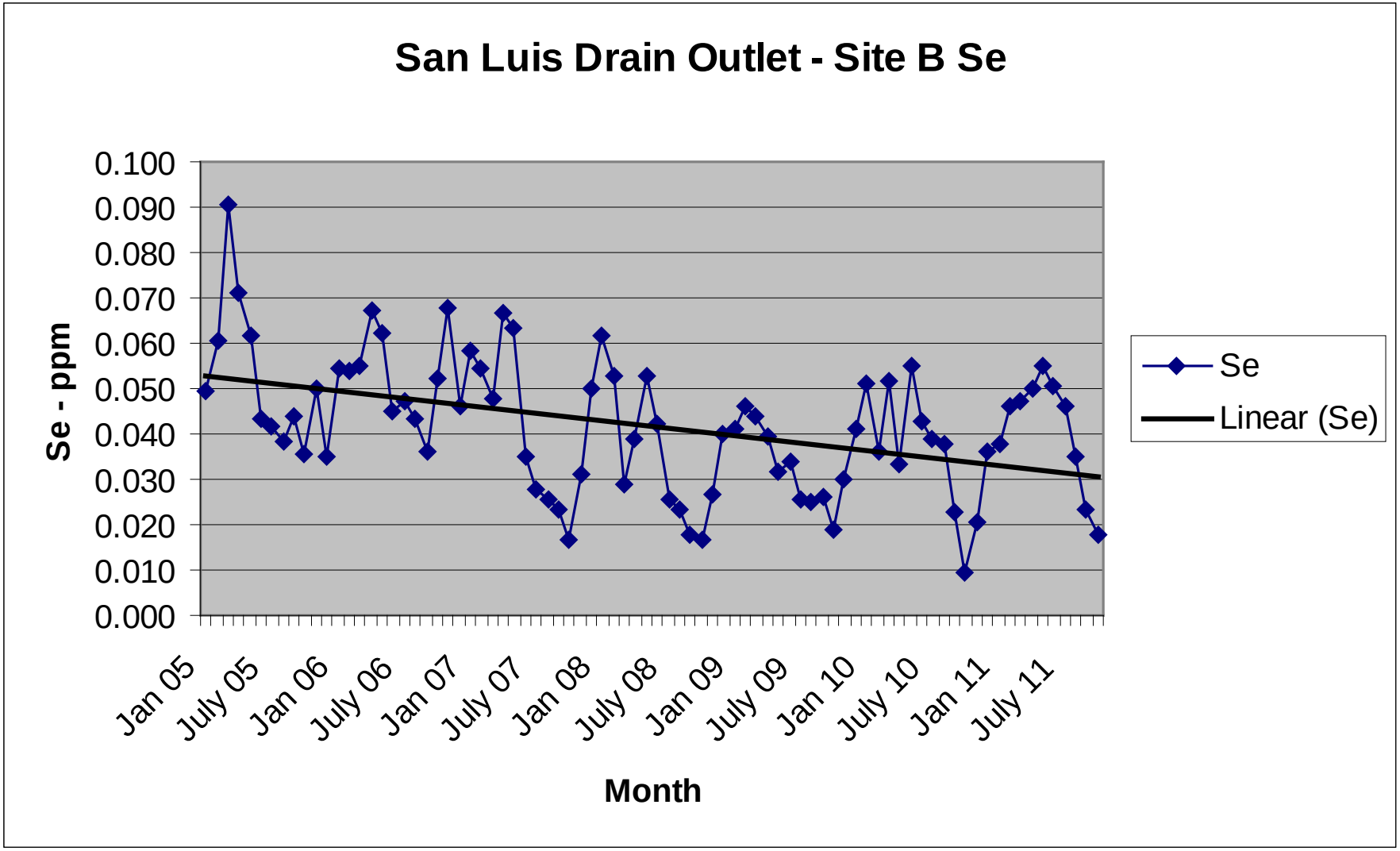
Accomplishments

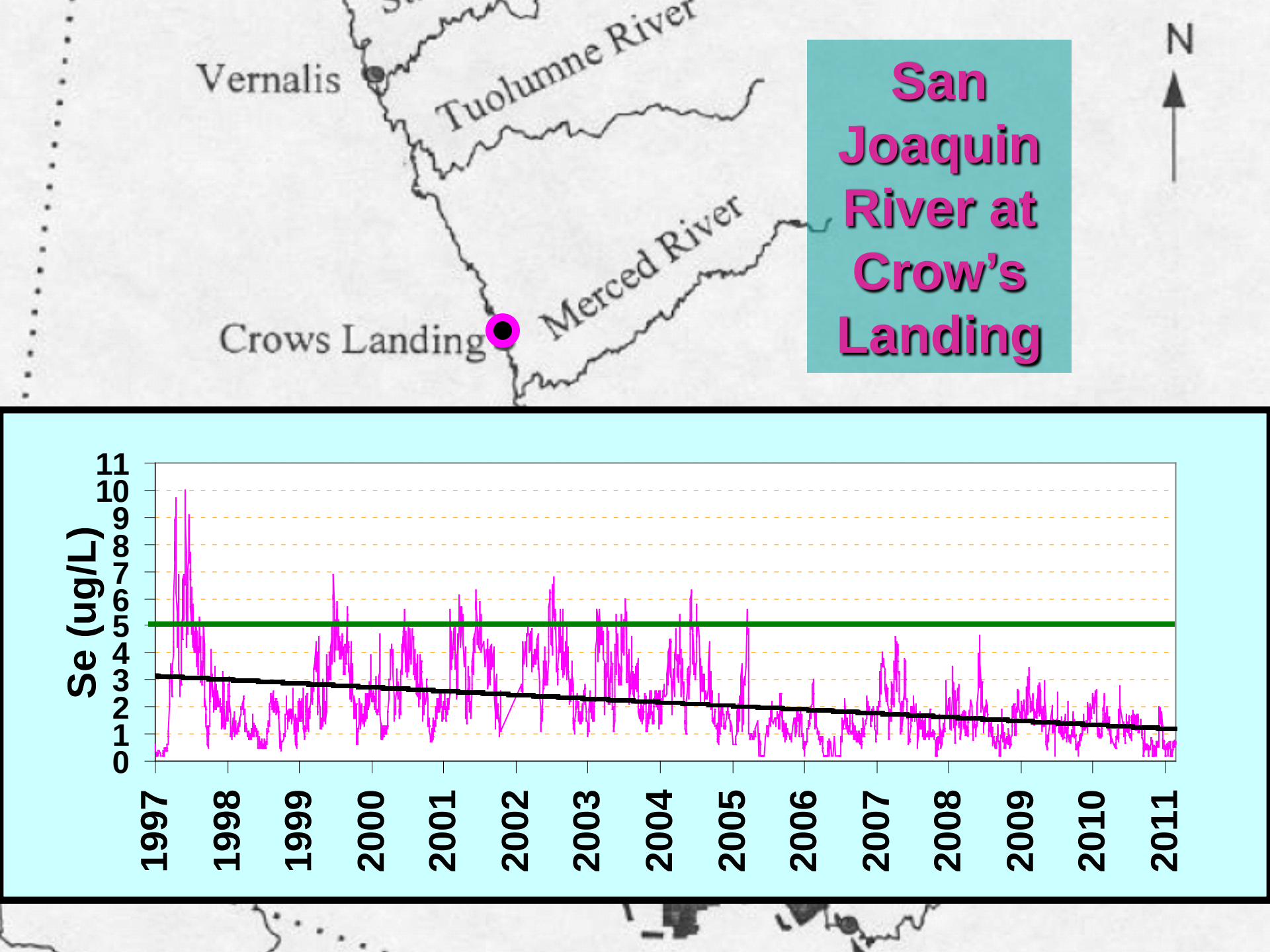
- Project has reduced selenium load to the San Joaquin River 87% since 1995
- Reduced flow by 75%
- Reduced salt load by 72%
- Reduced boron load by 64%

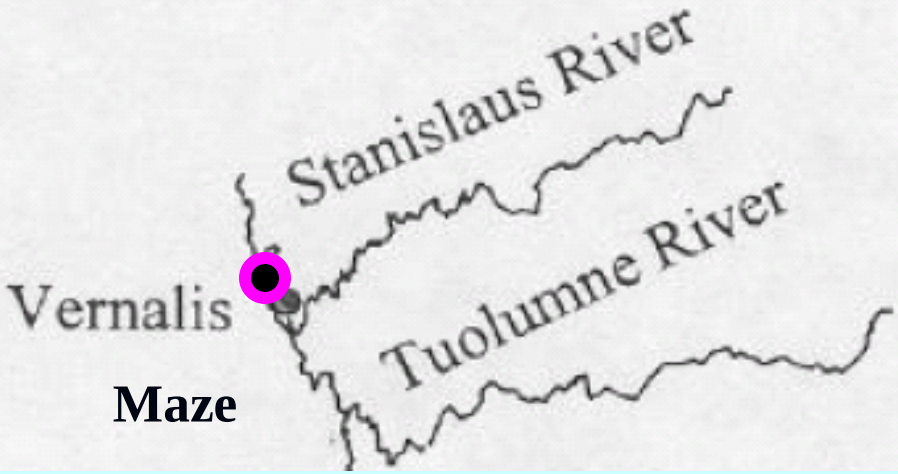
Historic Drainage Water (lbs selenium)
57,000 AF 12,700 lbs Se 240,000 Tons Salt



2010 Drainage Management

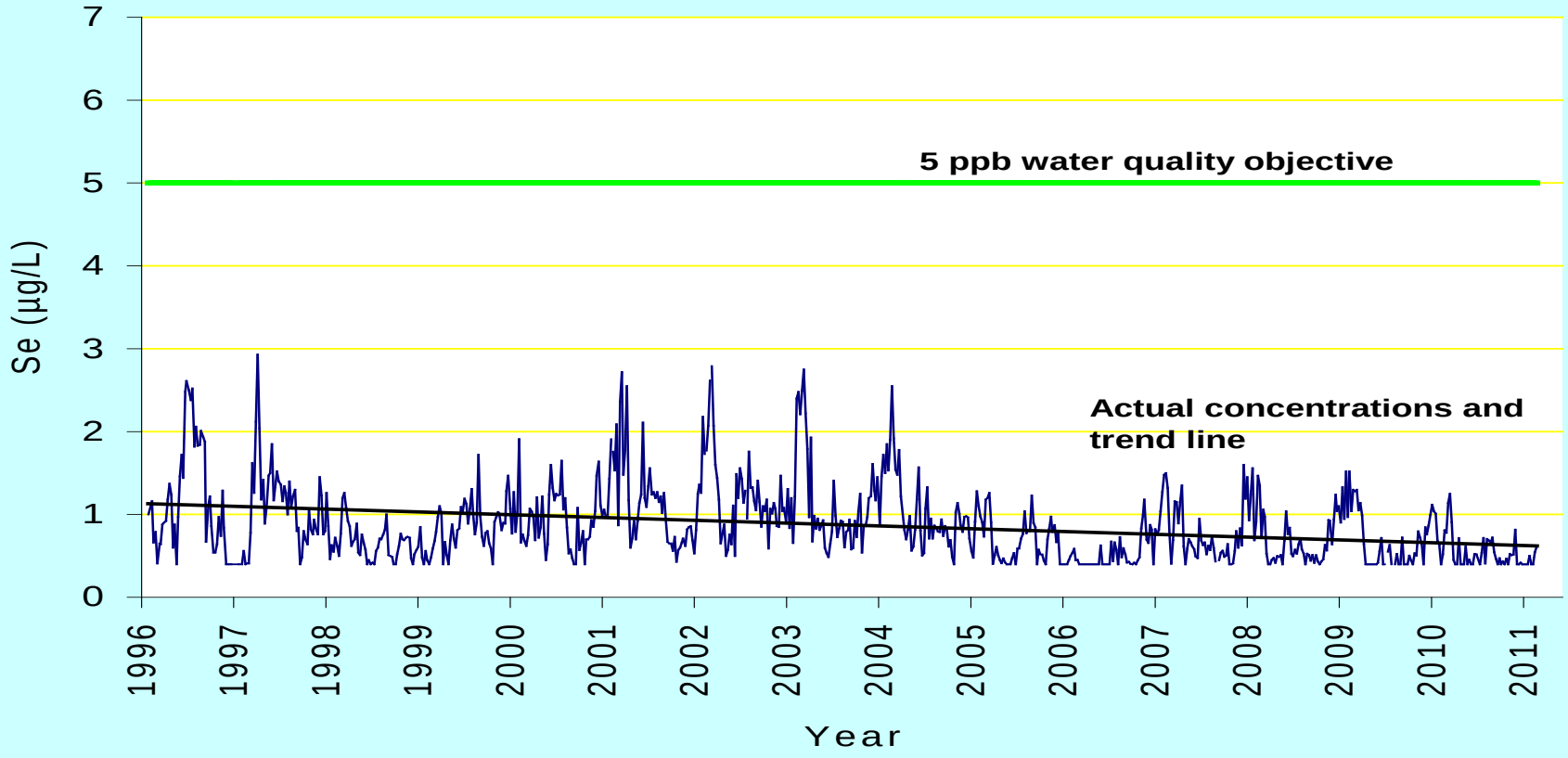

San Luis Drain Outlet - Site B Se
Se - ppm
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
Jan 05
July 05
Jan 06
July 06
Jan 07
July 07
Jan 08
July 08
Jan 09
July 09
Jan 10
July 10
Jan 11
July 11
Month
Se
Linear (Se)

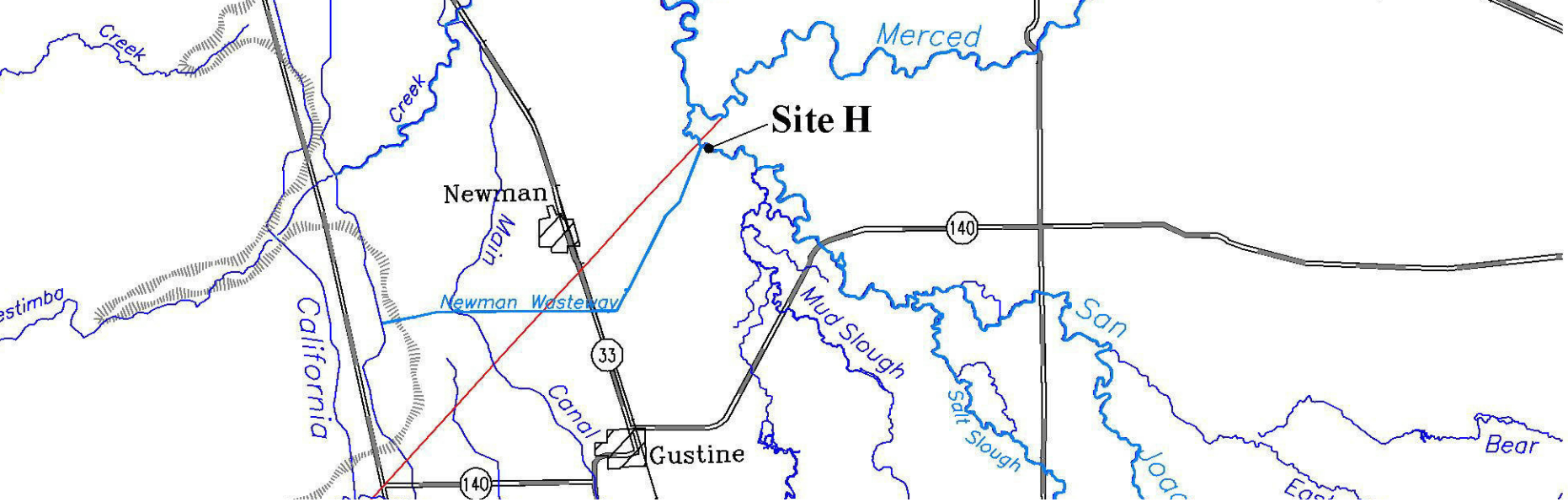

Vernalis
Tuolumne River
Merced River
Crows Landing
San Joaquin River at Crow's Landing
N
Se (ug/L)
0
1
2
3
4
5
6
7
8
9
10
11
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011



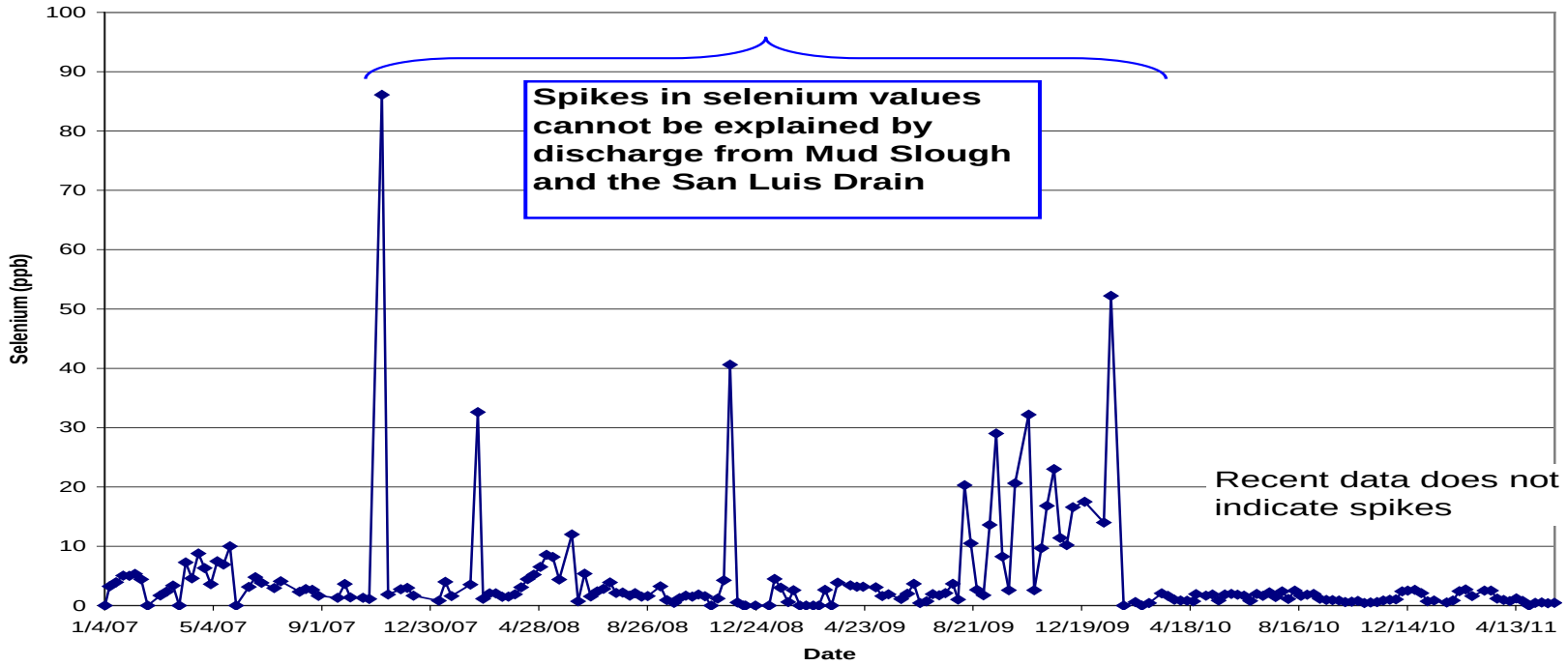
San Joaquin River at Airport Way (Vernalis)

N





Site H Selenium Concentrations



Drainage Treatment

- **Ultimate disposal for selenium and salt**
- **Currently in development**
  - Membrane treatment and salt crystallization that will produce a clean water stream and a dry waste product.
- **Pilot Plant planned for construction in 2012 and operation in 2014**